

CLAIMS

What is claimed is:

1. An original transport apparatus automatically taking up one or more originals one sheet at a time from where it or they is or are loaded in one or more original trays and transporting same toward one or more transport paths, wherein:
 - one or more outer casing members is or are arranged at one or more locations above one or more lower tip regions of at least one of the original tray or trays which is arranged so as to be inclined downward;
 - at least one of the outer casing member or members is disposed so as to permit opening and closing about one or more shafts arranged in one or more directions perpendicular to one or more directions of transport of at least one of the original or originals;
 - one or more stopper members and one or more engagement pieces are disposed at at least one of the outer casing member or members so as to permit respectively independent displacement in pivoting fashion about one or more shafts arranged in one or more directions perpendicular to at least one of the original transport direction or directions;
 - at least one of the stopper member or members causes at least one lead edge of at least one of the original or originals loaded in at least one of the original tray or trays to stop at at least one prescribed location;
 - at least one of the engagement piece or pieces engages with at least one of the stopper member or members;
 - when at least one of the outer casing member or members is in at least one closed state and the apparatus is in at least one original takeup standby state, engagement of at least one of the stopper member or members by at least one of the engagement piece or pieces causes the at least one stopper member to be retained in a state in which the at least one stopper member stops at least one of the lead edge or edges of at least one of the original or originals at at least one of the prescribed location or locations, constraining at least one location of at least one of the lead edge or edges of at least one of the original or originals and preventing entry of at least one of the original or originals

29 into at least one of the transport path or paths; and

30 when at least one of the outer casing member or members is in at least one of the
31 closed state or states and takeup of at least one of the original or originals is proceeding,
32 at least one of the engagement piece or pieces is displaced in pivoting fashion,
33 disengaging engagement between the at least one engagement piece and at least one of
34 the stopper member or members, permitting pivoting displacement of the at least one
35 stopper member and allowing transport of at least one of the original or originals.

1 2. An original transport apparatus according to claim 1 wherein:

2 at least one end of at least one arm member is supported by at least one of the outer
3 casing member or members so as to permit displacement in pivoting fashion; and

4 at least one shaft of at least one of the stopper member or members is secured to at
5 least one other end of at least one of the arm member or members.

1 3. An original transport apparatus according to claim 2 wherein:

2 when, during the course of closing at least one of the outer casing member or
3 members which had at least immediately prior thereto been in at least one open state, at
4 least one bottom region of at least one of the stopper member or members which is in at
5 least one engaged state with at least one of the engagement piece or pieces abuts and is
6 pressed upward by at least one of the original or originals loaded in at least one of the
7 original tray or trays, this causes at least one of the other end or ends of at least one of the
8 arm member or members to be displaced upward in pivoting fashion, in accompaniment
9 to which at least one of the stopper member or members moves upward in such fashion
10 as to cause it to be contained within at least one of the outer casing member or members.

1 4. An original transport apparatus according to claim 2 wherein:

2 at least one lifting piece for lifting at least one of the engagement piece or pieces
3 upward is integrally provided at at least one of the arm member or members; and

4 when, during the course of closing at least one of the outer casing member or
5 members which had at least immediately prior thereto been in at least one open state, at
6 least one bottom region of at least one of the stopper member or members which is in at
7 least one engaged state with at least one of the engagement piece or pieces abuts and is
8 pressed upward by at least one of the original or originals loaded in at least one of the
9 original tray or trays, this causes at least one of the other end or ends of at least one of the

arm member or members to be displaced upward in pivoting fashion, in accompaniment to which at least one of the stopper member or members moves upward, and at least one of the lifting piece or pieces moves upward so as to further lift upward at least one of the engagement piece or pieces and disengage engagement between at least one of the stopper member or members and at least one of the engagement piece or pieces.

5. An original transport apparatus according to claim 3 or 4 wherein:

at least one of the outer casing member or members is provided with at least one guide component causing at least one of the stopper member or members to be displaced in pivoting fashion such that it is raised upward when at least one of the arm member or members is displaced in pivoting fashion such that it subtends not less than at least one preestablished angle.

6. An original transport apparatus according to claim 3 or 4 wherein:

at least one of the outer casing member or members is provided with at least one guide component causing at least one of the stopper member or members to be displaced in pivoting fashion such that it is raised upward when at least one of the arm member or members is displaced in pivoting fashion such that it subtends not less than at least one preestablished angle;

at least one of the guide component or components is at least one guide surface formed at at least one top inside wall region of at least one of the outer casing member or members; and

at least one top region of at least one of the stopper member or members which has moved upward abuts at least one of the guide surface or surfaces and slides therealong so as to cause at least one of the stopper member or members to be displaced in pivoting fashion such that it is raised upward.

7. An original transport apparatus automatically taking up one or more originals one sheet at a time from where it or they is or are loaded in one or more original trays and transporting same toward one or more transport paths, wherein:

one or more outer casing members is or are arranged at one or more locations above one or more lower tip regions of at least one of the original tray or trays which is arranged so as to be inclined downward;

at least one of the outer casing member or members is disposed so as to permit

8 opening and closing about one or more shafts arranged in one or more directions
9 perpendicular to one or more directions of transport of at least one of the original or
10 originals;

11 one or more stopper members and one or more engagement pieces are disposed at at
12 least one of the outer casing member or members so as to permit respectively
13 independent displacement in pivoting fashion about one or more shafts arranged in one
14 or more directions perpendicular to at least one of the original transport direction or
15 directions;

16 at least one of the stopper member or members causes at least one lead edge of at least
17 one of the original or originals loaded in at least one of the original tray or trays to stop at
18 at least one prescribed location;

19 at least one of the engagement piece or pieces engages with at least one of the stopper
20 member or members;

21 one or more pickup arms is or are disposed at at least one of the outer casing member
22 or members so as to permit displacement in pivoting fashion about one or more shafts
23 arranged in one or more directions perpendicular to at least one of the original transport
24 direction or directions;

25 at least one of the pickup arm or arms has at least one pickup roller for taking up at
26 least one of the one or more originals one sheet at a time from where it or they is or are
27 loaded in at least one of the original tray or trays;

28 when at least one of the outer casing member or members is in at least one closed
29 state and the apparatus is in at least one original takeup standby state, the fact that at least
30 one of the pickup roller or rollers is positioned in at least one upper region within at least
31 one of the outer casing member or members causes engagement between at least one of
32 the stopper member or members and at least one of the engagement piece or pieces to be
33 retained, constraining at least one location of at least one of the lead edge or edges of at
34 least one of the original or originals and preventing entry of at least one of the original or
35 originals into at least one of the transport path or paths; and

36 when at least one of the outer casing member or members is in at least one of the
37 closed state or states and takeup of at least one of the original or originals is proceeding,
38 at least one of the pickup arm or arms is displaced downward in pivoting fashion so as to

39 cause at least one of the pickup roller or rollers to move downward and away from at
40 least one of the outer casing member or members so as to not be hidden thereby, and in
41 linked fashion with respect to this pivoting displacement, at least one of the engagement
42 piece or pieces is displaced in pivoting fashion, disengaging engagement between the at
43 least one engagement piece and at least one of the stopper member or members,
44 permitting pivoting displacement of the at least one stopper member and allowing
45 transport of at least one of the original or originals.

1 8. An original transport apparatus according to claim 7 wherein at least one of the
2 pickup arm or arms has:

3 one or more first standby positions, at which at least one of the pickup arm or arms
4 and at least one of the engagement piece or pieces are not engaged, but at which at least
5 one of the engagement piece or pieces and at least one of the stopper member or
6 members are engaged; and

7 one or more second standby positions, between at least one of the first standby
8 position or positions and at least one of the position or positions occupied when takeup
9 of at least one of the original or originals is proceeding and at least one of the pickup
10 roller or rollers has moved downward and away from at least one of the outer casing
11 member or members so as to not be hidden thereby, at which at least one of the pickup
12 arm or arms and at least one of the engagement piece or pieces are engaged, but at which
13 at least one of the engagement piece or pieces and at least one of the stopper member or
14 members are disengaged;

15 one or more retaining members being provided at at least one of the outer casing
16 member or members; and

17 at least one of the retaining member or members retaining at least one of the pickup
18 arm or arms when at least one of the second standby position or positions is occupied.

1 9. An original transport apparatus according to claim 8 wherein:

2 at least one of the retaining member or members comprises at least one elastically
3 deformable plate spring provided at at least one inside wall of at least one of the outer
4 casing member or members;

5 the at least one retaining member abutting at least one pivot tip region of at least one
6 of the pickup arm or arms, retaining the at least one pickup arm, when the at least one

7 pickup arm is displaced in pivoting fashion at least as far as at least one of the second
8 standby position or positions.

1 10. An original transport apparatus according to claim 8 wherein:

2 at least one of the retaining member or members comprises at least one pivot
3 projection provided at at least one basal side, about which pivoting occurs, of at least one
4 of the pickup roller or rollers, and at least one pivot constraining rod provided at at least
5 one apparatus main body and constraining pivoting of at least one of the pivot projection
6 or projections;

7 at least one of the pivot projection or projections abutting at least one of the pivot
8 constraining rod or rods, retaining the at least one pickup arm, when the at least one
9 pickup arm is displaced in pivoting fashion at least as far as at least one of the second
10 standby position or positions.

1 11. An original transport apparatus according to claim 8 further comprising:

2 one or more drive control means driving at least one of the pickup arm or arms so as
3 to displace it in pivoting fashion;

4 at least one of the drive control means for driving at least one of the pickup arm or
5 arms so as to cause it to be displaced in pivoting fashion from at least one of the first
6 standby position or positions to at least one of the second standby position or positions
7 when at least one of the outer casing member or members which had at least immediately
8 prior thereto been in at least one closed state is opened.